

Mineral Industry Surveys

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PRECIOUS METALS IN APRIL 2002

U.S. mines produced 21,000 kilograms (kg) of gold and 112,000 kg of silver in April 2002. Compared with March 2002, production of gold was down 12% in California and 8% in Nevada, and production of silver was down 38% in Nevada.

Gold

Domestic.—The U.S. Philadelphia Mint shut down manufacturing operations from March 1 through April 9 to correct worker health and safety problems. In October 2001, the Occupational Safety and Health Administration found 47 safety violations and other hazards at the facility (American Metal Market, 2002c).

According to the World Gold Council, 2001 was the 11th consecutive year of unit sales increases for gold jewelry in the United States. Total U.S. gold jewelry sales exceeded \$15.6 billion, up by more than 2% from sales in 2000 (American Metal Market, 2002d).

International.—India eased imports of gold and silver jewelry by granting a general license for imports to Indian citizens. Only a limited number of individuals were licensed to import gold or silver jewelry before March 31 (Platts Metals Week, 2002a).

Barrick Gold Corp. discovered a deposit of 110,000 kg (3.5 million troy ounces) of gold at its Alto Chicama property in Peru. Alto Chicama is 175 kilometers from Barrick's Pierina Mine and has similar grades and gold-rich outcroppings. Development of the property would extend the life of the Pierina Mine, which is a major gold producer with an average gold production of 15,600 kg (500,000 ounces) at a total cash cost of \$90 per ounce (American Metal Market, 2002a).

The World Gold Council (WGC) is seeking ways to build sustainable long-term demand for gold products and increase

gold's market share within the investment and jewelry sectors. Consequently, WGC launched a "major strategic initiative" to identify and respond to marketplace challenges ranging from consolidation of both the producing and consuming sectors to a different focus on gold by some central and commercial banks and other market participants (American Metal Market, 2002e).

Gold Fields Mineral Services Ltd. reported that the average cash cost of world gold production declined 6% in 2001 to \$176 per ounce, and total gold production costs averaged \$228 per ounce. Over 85% of the gold was produced at a total cost that was less than the average spot price of \$271 per ounce in 2000. Australian gold production had the lowest total cost, followed by South Africa and Canada. A significant part of the decline in costs in Australia and South Africa can be attributed to local currency depreciation (Mining Journal, 2002).

Silver

Hecla Mining Co., Coeur d'Alene, ID, increased its 2002 silver production estimate for the San Sebastian Mine by 40% to 87,100 kg. The company also predicted gold production at the mine would reach 995 kg, up 28% from earlier estimates of 778 kg. Hecla reported that San Sebastian, located in central Mexico, produced more than 23,800 kg of silver and more than 280 kg of gold during the first 3 months of 2002. Hecla also reported that its Lucky Friday and Greens Creek mines were on track to produce 140,000 kg of silver in 2002 for Hecla's account (Hecla Mining Co., 2002).

Platinum-Group Metals

Palladium prices fell sharply in the first week of April as Ford Motor Co. confirmed that it had developed a catalytic converter that would cut palladium consumption by more than 50%. The Dearborn, Michigan-based company said in a filing

with the Securities and Exchange Commission that it has begun selling its huge stockpiles of the metal, confirming what market sources have been saying for weeks. Ford also plans to sell back certain commitments for previously bought forward contracts for palladium. During 2000-2001, Ford entered into a number of forward contracts to buy PGM at the prevailing price in an effort to safeguard its supplies and avoid buying into a rising spot market. The spot price of palladium rose from \$200 per ounce in 1997 to a record \$1,100 per ounce in late January 2001. The record high prices were short lived as consumers cut their palladium requirements by thrifting and substitution of other metals. These users included electronics manufacturers, jewelers, and even dental alloy manufacturers, where cheaper gold and nickel were readily substituted for palladium (American Metal Market, 2002b; Platts Metal Week, 2002b).

If all goes as planned, construction on Australia's first primary platinum producer—Platinum Australia Ltd's (PLA) Panton project—could begin in 2003 with production due to start in 2004. That was the message delivered at the 2nd annual Australian Platinum Conference, Perth, Western Australia. The decision to begin construction depends on the outcome of a bankable feasibility study due for completion in September 2002. Work on the study began in July 2001 after the favorable outcome of a prefeasibility study. The feasibility study was to have been completed in March 2001 but was extended to allow further work on a new metallurgical process.

The new metallurgical process involves the use of cyanide leaching to produce a high-grade concentrate. Cyanide leaching is used widely in the gold industry, and therefore carries a low technical risk. However, none of the world's

PGM producers use this metallurgical route. Cyanide leaching has been tried before and shown not to be efficient on the more complex platinum ores. According to PLA, the new process has been proven in the laboratory and further research at pilot plant level is in progress.

PLA executives expect that the Panton mine will treat about 1 million tons of ore per year grading 5 grams per ton precious metals to produce 3,000-4,000 kilograms per year of PGM and gold along with 1,000-1,500 metric tons per year (t/yr) nickel; 500-800 t/yr copper and 50-100 t/yr cobalt (Australian Platinum Conference, 2002).

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${\bf TABLE~1}$ MINE PRODUCTION OF RECOVERABLE GOLD AND SILVER IN THE UNITED STATES, BY STATE 1/

(Kilograms)

				Other	
Gold	Alaska	California	Nevada	States 2/	Total
2001:					
April	1,240	1,180	20,300	4,280	27,000
May	1,290	857	20,700	4,620	27,500
June	1,240	1,270	22,200	4,720	29,400
July	W	1,070	22,700	5,840	29,600
August	1,370	784	21,100	3,700	27,000
September	W	699	20,200	5,380	26,300
October	W	746	18,000	8,250	27,000
November	W	793	17,800	5,090	23,700
December	W	871	19,400	4,890	25,200
January-December p/	9,190	12,000	244,000	59,200	325,000
2002:					
January	W	954 r/	17,000 r/	4,320 r/	22,300 r
February		797 r/	16,800 r/	4,150 r/	21,700 r
March		1,000 r/	18,600 r/	4,460 r/	24,100 r
April	W	880	16,000	4,160	21,000
January-April	W	3,630	68,300	17,100	89,000
				Other	
Silver	Arizona	Idaho	Nevada	States 3/	Total
2001:					
April	W	W	37,000	106,000	143,000
May	W	W	50,900	94,700	146,000
June	W	W	60,400	92,400	153,000
July	W	W	43,700	87,600	131,000
August	W	W	49,300	87,500	137,000
September		W	48,200	72,400	121,000
October	W	W	36,500	79,200	116,000
November	W	W	45,200	74,400	120,000
December		W	54,400	89,100	144,000
January-December p/	W	40,600	555,000	1,010,000	1,600,000
2002:					
January	W	W	37,300	81,800 r/	119,000
February	W	W	47,600	79,300 r/	127,000
March	W	W	48,000	86,300 r/	134,000 r
April	W	W	29,900	82,500	112,000
January-April		W	163,000	330,000	493,000

p/ Preliminary. r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Other States."

^{1/} Data are rounded to no more than three significant digits; may not add to totals shown.

 $^{2/\}operatorname{Includes} Arizona, Colorado, Idaho, Montana, New Mexico, South Carolina, South Dakota, Utah, Washington, and State indicated by symbol W.$

^{3/} Includes Alaska, California, Colorado, Missouri, Montana, New Mexico, New York, South Carolina, South Dakota, Tennessee, Utah, Washington, and States indicated by symbol W.

TABLE 2 SELECTED PRECIOUS METAL PRICES

(Dollars per troy ounce)

	Gold	Silver	Platinum	Palladium
Engelhard Industries:				
2001:				
Low/date	257.04 April 2	4.05 November 26	419.00 November 7	319.00 November 13
High/date	294.40 September 17	4.87 January 30	645.00 January 10 and 15	1,100.00 January 26
Average	272.22	4.39	533.31	610.61
2002:				
February:				
Low/date	285.03/1	4.32/4	454.00/1	369.00/5
High/date	305.47/8	4.58/14	495.00/28	395.00/13
Average	296.50	4.45	474.00	377.79
March:				
Low/date	290.29/8	4.51/7 and 11	509.00/7	365.00/5 and 6
High/date	302.56/28	4.72/28	526.00/11	395.00/26
Average	295.21	4.56	514.65	377.48
April:				
Low/date	298.91/16	4.46/16	525.00/1	361.00/30
High/date	310.88/29	4.72/1 and 3	561.00/18	396.00/1
Average	303.84	4.60	542.09	372.50
Year to date:				
Low/date	278.62 January 29	4.26 January 31	454.00 February 1	361.00 April 30
High/date	310.88 April 29	4.79 January 10	561.00 April 18	439.00 January 3
Average	294.54	453	501.48	384.99
Handy and Harman:				
2001, Average	271.06	4.39	XX	XX
2002:				
February	295.40	4.45	XX	XX
March	294.06	4.56	XX	XX
April	302.68	4.61	XX	XX
Average year to date	293.40	4.53	XX	XX
London Final: 1/				
2001, Average	270.99	4.37	XX	XX
2002:				
February	295.49	4.42	XX	XX
March	294.06	4.53	XX	XX
April	302.68	4.57	XX	XX
Average year to date	293.44	4.51	XX	XX
3/3/ 37 . 1' 11				

XX Not applicable.

1/ Silver price reported as "London Spot/US Equiv."

Source: Platts Metals Week.

TABLE 3 U.S. IMPORTS AND EXPORTS OF GOLD 1/

(Kilograms of gold content, unless otherwise specified)

Period and country	Ores and concentrates 2/	Doré and precipitates	Refined bullion 3/	Ash and residues	Total 4/	Waste and scrap (gross weight)	Metal powder (gross weight)	Gold compounds (gross weight)
Imports for consumption:						<u> </u>	(8)	<u> </u>
2001	1,260	31,100	161,000	193	194,000	26,400	9,450	1,960
2002:	,	,	,		',***	,	2,100	-,
January	- 	2,430	10,100		12,600	2,390	1,290	52
February	_ 2	2,220	11,700		13,900	444	2,430	57
March:								
Brazil	- 		819		819	1		
Canada	- 		11,500		11,500	79	1,230	
Chile	- 		375		375			
Colombia	- 	43	289		332		114	
Dominican Republic	- 		45		45	163		
Honduras	- 	453			453		439	
Mexico	- 	81	116		197	90		
Nicaragua	- 	193			193			
Peru	- 	1,080	8		1,090			
Other	- 9	123	194		326	116	69	19 5
Total	9	1,980	13,400		15,300	449	1,850	19
Year to date	10	6,630	35,200		41,800	3,280	5,570	128
Exports:			-					
2001	361	93,900	395,000		489,000	40,100	11,600	492,000
2002:	_							
January	- 6	71	17,700		17,800	796	1,520	20,700
February	51	5,380	11,800		17,200	868	1,700	18,400
March:	_							
Cambodia								1,470 5
Canada			123		123	281	2	466 5
Dominican Republic	110				110			214 5
Germany			1		1	87		600 5
Hong Kong							9	7
India	_ 5				5			
Israel	1	2			3			15
Malaysia	<u></u>		103		103			
Mexico		5	562		567		680	
Peru			294		294		84	
Switzerland		4,240	5,140		9,380	187	516	
United Kingdom	- 1	·	9,270		9,270		18	859 5
Other		2	117		119	146	1	38 5
Total	117	4,250	15,600		20,000	701	1,310	3,670
Year to date	174	9,700	45,100		54,900	2,370	4,530	42,800

⁻⁻ Zero.

^{1/} Data are rounded to no more than three significant digits; may not add to totals shown.

^{2/} Includes gold content of base metal ores, concentrates, and matte imported for refining.

^{3/} Bullion also moves in both directions between U.S. markets and foreign stocks on deposit in the Federal Reserve Bank. Monetary gold excluded.

^{4/ &}quot;Waste and scrap," "Metal powder," and "Gold compounds" not included in "Total."

^{5/} All or part of these data have been referred to the U.S. Census Bureau for verification.

TABLE 4 U.S. IMPORTS FOR CONSUMPTION OF SILVER 1/

(Kilograms of silver content, unless otherwise specified)

			Ores and	Ash and		Other unwrought silver	Metal powder	Silver nitrate	Semimanu- factured form 3/	Waste and scrap
Period and country	Bullion	Doré	concentrates 2/	residues	Total	(gross weight)	(gross weight)	(gross weight)	(gross weight)	(gross weight)
2001	2,940,000	151,000	7,550	38,000	3,130,000	249,000	24,200	26,000	153,000	1,110,000
2002:	_									
January	420,000	23	1,570	3,260 r/	425,000	10,300	160		13,300	14,200
February	260,000	721	623	7,830 r/	269,000	14,000	23		26,600	29,900
March:										
Australia				4,530	4,530			-		
Brazil									11,400	1
Canada	143,000 4/			787	144,000	1,460 4	/ 34		611 4	/ 6,250
Chile	13,500				13,500					1
Colombia	541				541					
Dominican Republic				17	17					88
France						39	480		13 4	/
Germany							590		2,720 4	/ 12,700
India									125 4	/
Ireland										284
Italy						90			2 4	/ 17
Japan				(5/)			1,360 4		100 4	/ 470
Korea, Republic of									1,990 4	/ 45
Mexico	145,000			950	146,000	15,900			129	2,540
Panama	92			12	104					
Peru	23,000				23,000					
Philippines										10,500
Poland									443	
Singapore										81
Switzerland				295	295					
Taiwan									830 4	/
United Kingdom				1,160	1,160				10 4	/ 1,580
Other	31				31				1 4	
Total	326,000			7,760	334,000	17,500	2,460		18,400	34,500
Year to date	1,010,000	743	2,190	18,900	1,030,000	41,800	2,640		58,300	78,500

⁻⁻ Zero.

^{1/} Data are rounded to no more than three significant digits; may not add to totals shown.

^{2/} Includes silver content of base metal ores and concentrates.

^{3/} Containing 99.5% or more by weight of silver.

⁴ All or part of these data have been referred to the U.S. Census Bureau for verification.

^{5/} Less than 1/2 unit.

TABLE 5 U.S. EXPORTS OF SILVER 1/

(Kilograms of silver content, unless otherwise specified)

					Other			Semimanu-	
					unwrought	Metal	Silver	factured	Waste
			Ores and		silver	powder	nitrate	form 3/	and scrap
Period and country	Bullion	Doré	concentrates 2/	Total	(gross weight)				
2001	707,000	18,200	239,000	963,000	48,800	187,000	143,000	203,000	1,810,000
2002:	_								
January	217,000	1,330	35,000	253,000	7,680	6,000	6,070	9,170	208,000
February	39,400	1,870	35	41,300	2,430	16,400	3,570	11,900	210,000
March:	_								
Armenia					133 4	·/		65	
Belgium					45	116		146	25,400
Brazil							19	521	
Canada	225			225	1,710	1,030	4,130	4,940	55,800
China						449		54	17,300
Dominican Republic								100	
Finland						327			
France						1,980		283	
Germany						740	52	200	13,900
Hong Kong					96 4	/ 270		719	5
India	91			91		95		37	
Ireland						27		148	
Italy						23		338	29,000
Japan						804		5,650	
Korea, Republic of					3,210	1,700		193	
Mexico			583	583		4,680	370	1,150	
Netherlands					19 4	l/		859	58
Saudi Arabia									4,170
Singapore						389		461	
Spain								1,650	
Sweden						19		26	15,400
Switzerland	-	1,590		1,590		27		33	
Taiwan	25 4/			25	43	2,500		1,320	121
United Kingdom	75,500			75,500		2,210		510	64,200
Other	48			48	80	22		77	9
Total	75,900	1,590	583	78,100	5,330	17,400	4,570	19,500	225,000
Year to date	332,000	4,790	35,700	372,000	15,400	39,800	14,200	40,500	643,000

^{1/} Data are rounded to no more than three significant digits; may not add to totals shown.

^{2/} Includes silver content of base metal ores and concentrates.

^{3/} Semimanufactured (including silver plated with gold or platinum) forms of silver.
4/ All or part of these data have been referred to the U.S. Census Bureau for verification.

$\label{thm:table 6} \textbf{U.S. IMPORTS FOR CONSUMPTION OF PLATINUM-GROUP METALS 1/}$

(Kilograms of metal content)

	Platinum		Other		Platinum							
	grain and	Platinum	unwrought	Platinum,	waste and	Platinum	Unwrought	Palladium,		Unwrought	Unwrought	
Period and country	nuggets	sponge	platinum	other	scrap	coins	palladium	other	Iridium 2/	osmium	ruthenium	Rhodium 3/
2001	2,480	68,700	3,660	5,330	3,960	53	146,000	13,600	3,110	77	8,170	12,400
2002:												
January	65	4,710	478	339	643		4,510	370	134		875	744
February	47	5,610	218	406	2,260		6,140	591	314		1,020	411
March:												
Australia					2							
Belgium		593					2,330					49
Brazil					126						-	
Canada	5	2		52	81	6	275					
Chile					8							
China				1			185			3		
Colombia			6		10							
Czech Republic			1									
France				2								
Germany	18	107	22	112	22		191	298 4/	39		189	47
Greece	· 				1							
Israel			71									
Italy		39						34				(5/)
Japan					28		569	36				
Korea, Republic of					13							
Mexico		33			71			26				2
Norway		16					224					
Russia		310						3				
South Africa	62	1,380		28			1,020	373	46		755	376
Sweden		·					46					
Switzerland		164	4	24			90	69				
United Kingdom		2,640	39	69	254	6	1,810	1	138			49
Total	85	5,280	143	288	616	12	6,740	841	224	3	943	524
Year to date	197	15,600	838	1,030	3,520	12	17,400	1,800	672	3	2,840	1,680

⁻⁻ Zero.

^{1/} Data are rounded to no more than three significant digits; may not add to totals shown.

^{2/} Unwrought and other forms of iridium.

^{3/} Unwrought and other forms of rhodium.

^{4/} All or part of these data have been referred to the U.S. Census Bureau for verification.

^{5/} Less than 1/2 unit.

TABLE 7 U.S. EXPORTS OF PLATINUM-GROUP METALS 1/

(Kilograms of metal content, unless otherwise specified)

	D. II. 11	N .: 2/	Platinum waste and	Iridium, osmium and	D1 1: 0/
Period and country	Palladium 2/	Platinum 2/	scrap	ruthenium 2/3/	Rhodium 2/
2001	37,000	29,300	12,900	1,370	982
2002:		1.040	50.5	110	22
January	3,440	1,840	725	112	22
February	2,530	1,950	498	104	9
March:	_	_			
Australia	26 4/	3			
Austria		2			
Belgium	1			-	
Brazil	11	20 4/			
Canada	535 4/	129 4/	202		(5/) 4
China	41 4/	3			
Denmark	10	2 4/		-	
Dominican Republic				-	(5/) 4
Finland					
France	43	14			(5/) 4
Germany	371 4/	315 4/	178	1	1 4
Haiti	1				
Hong Kong	3 4/	9		-	1 4
Iceland	(5/)			-	
India					(5/) 4
Ireland	187	76 4/		(5/) 4/	` <u></u>
Israel				` <u>-</u>	
Italy					
Japan	270 4/	780 4/	129	28 4/	25 4
Korea, Republic of	38 4/	8 4/		(5/) 4/	
Malaysia		18 4/		-	
Mexico	38 4/	10			
Netherlands	1 4/	5 4/			
New Zealand	13 4/	4			
Norway	4	1		2	
Peru			3		
Philippines	2 4/	12 4/		_	
Saudi Arabia		2 4/		_	
Singapore	869 4/	6			
Slovenia	— 11 4/				
South Africa					(5/)
Spain					(37)
Sweden		6		-	
				-	
Switzerland	14 149 4/	638			 1 4
Taiwan		1 4/			1 4
Thailand		11			
Turkey	(5/)				
United Kingdom	166	171	(5/)	97	1 4
Total	2,840	2,240	513	128	28
Year to date	8,810	6,040	1,740	345	60

⁻⁻ Zero.

 $^{1/\,\}text{Data}$ are rounded to no more than three significant digits; may not add to totals shown.

^{2/} Unwrought and other forms.

^{3/} Gross weight.

^{4/} All or part of these data have been referred to the U.S. Census Bureau for verification.

^{5/} Less than 1/2 unit.